



Massachusetts  
Department  
of  
ENVIRONMENTAL  
PROTECTION

## Summary

### Cost Savings:

\$23,759

### Project:

Commercial  
Interior  
Renovation of  
10,200 sq. ft.  
Basement

### Recycled:

140 Tons of  
Concrete for a  
Savings of  
\$17,648

### Reused:

5 Tons of Wood  
for a Savings of  
\$6,075

### Total Waste Reduction:

79%

- 145 Tons  
Reused or  
Recycled
- 39 Tons  
Disposed

### Contract:

\$1.05 Million  
Lump-Sum,  
Private Owner

### Work Site:

Urban

### Completion:

Fall 2002

## Construction and Demolition Waste Reduction

This case study is one in a series developed by Massachusetts Department of Environmental Protection (DEP) to highlight techniques for saving money and protecting the environment through reuse and recycling of construction and demolition debris.

### Project Description: St. Paul's Cathedral, Worcester, Massachusetts

Consigli Construction Inc. was the lead contractor for interior renovation of the reception area in the basement of St. Paul's Cathedral. The 130-year-old granite cathedral is located in a congested urban neighborhood. Consigli recycled and reused a total of 145 tons of material and disposed of 39 tons of mixed construction and demolition waste for a total waste reduction rate of 79 percent.



### Spotlight: Wood Reuse and Concrete Recycling

- **Wood Reuse.** Consigli saved St. Paul's \$6,075 by reusing 5 tons of existing wainscoting in a social room. Replacement material would have cost about \$9,000 and disposal another \$575. Labor costs associated with restoring and reusing the original wainscoting amounted to only \$3,500. The project architect also emphasized the historic and economic value of preserving the original woodwork, which was custom-made for the cathedral during renovations made at the turn of the 20<sup>th</sup> century. By carefully rehabilitating original woodwork, the contractor not only reduced costs – installing “new” antique ash woodwork would have been much more expensive – but also preserved an important piece of the building's history.
- **Concrete Recycling.** Due to work site constraints, Consigli was unable to crush and reuse concrete on-site. Instead, the company removed 140 tons of concrete to an off-site recycling facility, saving St. Paul's approximately \$17,700 (the difference between the \$936 actual cost of recycling and the projected \$18,620 cost of disposal).

### Keys to Success: Reuse of Materials

There are a number of steps the architect and contractor can take to minimize the costs and environmental impacts of a renovation project:

**Project Planning.** Integrate reuse into the contracting and waste management planning process. Talk to the client before renovations begin to identify opportunities for reusing materials already on site.

**Cost Estimating.** Conduct a materials reuse survey, documenting potential savings from avoided replacement and disposal costs. Make the benefits of reuse transparent to the client.

**Reuse Alternatives.** If reusing materials on-site is neither possible nor practical, consider other options:

- Generate revenue by selling salvage rights or by holding an on-site sale or auction of building materials.
- Donate unwanted building materials (windows, doors, fixtures, etc.) to a non-profit organization or municipal agency so the building owner can qualify for a tax deduction.

### Project Team

- **Building Owner**

St. Paul's Cathedral, Roman Catholic Diocese of Worcester  
38 High Street, Worcester, MA 01609, Telephone: (508) 799-4193  
Contacts: Rev. Richard Ready, Pastor, and Gary Gagne, Building Supervisor

- **Contractor**

Consigli Construction Inc.  
197 East Main Street, Milford, MA 01757, Telephone: (508) 473-2580, ext. 359  
Contacts: Mike Socci, Project Manager, and John Laperle, Superintendent

- **Recycling Consultant**

greenGoat, P.O. Box 441911, Somerville, MA 02144, Telephone: (617) 666-5253  
Contact: Amy Bauman, President

### Additional Resources on Reuse

- Massachusetts Department of Environmental Protection (DEP) Web site on Construction and Demolition Materials: Reuse and recycling resource for building and demolition contractors includes case studies, model specifications, best practices and a list of organizations that accept unwanted materials for reuse or recycling. <http://www.state.ma.us/dep/recycle/recycle.htm>
- U.S. Environmental Protection Agency Web sites:
  - Reuse in New England: Lists organizations that accept donations of used or unwanted building materials.  
<http://www.epa.gov/ne/assistance/reuse/index.html>
  - Construction and Demolition Publications: Reuse and recycling resource for contractors includes model specifications, best practices and techniques.  
<http://www.epa.gov/region09/waste/solid/c&d.html#9>

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